

DP-301830

## AUTOMATED HORIZONTALLY STRUCTURED MANUFACTURING PROCESS DESIGN MODELING

### ABSTRACT OF THE DISCLOSURE

Disclosed is a method of horizontally structured automated CAD/CAM manufacturing process, comprising: selecting a blank for machining into an actual part; establishing a coordinate system; creating a master process model comprising: virtual blank corresponding to the blank; a manufacturing feature; virtual machining of the manufacturing feature into the virtual blank, the manufacturing feature exhibiting an associative relationship with the coordinate system; and generating machining instructions to create the actual part by machining the manufacturing feature into the blank; capturing manufacturing process rules in a spread sheet; and the spread sheet exhibiting an associative relationship with the master process model. Also disclosed is a manufactured part created by a method of horizontally structured automated CAD/CAM manufacturing process, comprising: a blank for machining into the manufactured part; a coordinate system; a master process model comprising: a virtual blank corresponding to the blank; a manufacturing feature wherein the manufacturing feature is characterized by virtual machining of the manufacturing feature into the virtual blank, the manufacturing feature exhibiting an associative relationship with the coordinate system; and the actual part created by machining the manufacturing feature into the blank in accordance with a machining instruction; manufacturing process rules captured in a spread sheet; and the spread sheet exhibiting an associative relationship with the master process model. Also disclosed is a storage medium encoded with a machine-readable computer program code for horizontally structured automated CAD/CAM manufacturing. The storage medium including instructions for causing a computer to implement the method of horizontally structured CAD/CAM modeling and manufacturing. Additionally disclosed is a computer data signal for horizontally structured automated CAD/CAM manufacturing. The computer data signal comprising code configured to cause

a processor to implement a method of horizontally structured CAD/CAM modeling and manufacturing.

Figure 1 displays 12 histograms showing the distribution of the number of non-zero elements in the vector  $x$  for different values of  $n$  (10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120). The x-axis is labeled 'x' and ranges from 0 to 120. The y-axis is labeled 'count' and ranges from 0 to 100. The distributions are centered around 60 and become more spread out as  $n$  increases.